THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 10/799,234 **Art Unit:** 1711

Applicants: Shidaker **Examiner:** R. Sergent

Filed: March 12, 2004

Title: Internal Mold Release Compositions

Rule 1.132 Declaration Of Trent Shidaker

I, Trent A. Shidaker, the undersigned, state the following:

1. I am over the age of twenty-one (21) years and of sound mind to make this declaration.

2. I received a Master of Science degree in Chemical Engineering from Michigan State University.

3. I have been employed by Huntsman Polyurethanes since 1996 and my present title is Development Manager - Composites and Rigids Structural.

4. I am an inventor/co-inventor on at least three (3) United States Patents, including, U.S. Pat. No. 5,770,143; U.S. Pat. No. 5,844,217; and U.S. Pat. No. 6,887,911.

5. I have been active in the field of polyurethane since 1996.

6. I have read U.S. Patent Number 5,389,696 to Dempsey et al., and understand the disclosure therein.

7. In my opinion, the examples cited in the Dempsey patent reference U.S. Patent No. 5,389,696 fall outside of the claims of App. No. 10/799,234. In particular, Dempsey does not disclose a surfactant which contributes more than 0.006 moles of EO per 100g of the polymer derived from the reaction system. Instead, the surfactant of Dempsey's Example 1 contributes at most 0.0053 moles of EO per 100g of the polymer derived from the reaction system. I provide the following calculations in support of my opinion:

The surfactant concentration on the B-side is calculated by the following expression.

$$[S]_B = [PBW]_B / [PBW]_{Total} \quad [1]$$

The mass fraction of the B-side in the polyol is given by:

$$[B] = 1/[(A/B)+1], \text{ where} \quad [2]$$

A/B is the A to B mass ratio

The surfactant concentration in the polymer is determined by:

$$[S]_P = [S]_B [B] \quad [3]$$

A poly(dimethylsiloxane) surfactant structure is defined by the following chemical formula:

$$(CH_3)_3Si\text{-}O\text{-}[(CH_3)_2Si\text{-}O\text{-}]_n\text{-}[CH_3\text{-}Si(R)\text{-}O\text{-}]_m\text{-}Si(CH_3)_3 \text{ where} \quad [4]$$

$$R = -(CH_2)_3\text{-}O\text{-}[EO]_x\text{-}R' \quad [5]$$

The product m·x results in the number of moles of EO per mole of surfactant.
The moles of EO per gram of surfactant is calculated as follows:

$$m{\cdot}x/MW_{s,AVG} \text{ where} \quad [6]$$

$MW_{s,AVG}$ = average molecular weight of the surfactant

Equations [1], [2], [3], and [6] were substituted, and the moles of EO per 100-g of polyol was expressed as follows:

$$\text{Moles of EO/100-g polymer} = [PBW]_B / [PBW]_{Total} [1/[(A/B)+1]] [100\ m{\cdot}x/MW_{s,AVG}] \quad [7]$$

NIAX® L-6980 has the following surfactant parameters:

m = 11
x = 7
$MW_{s,AVG}$ = 8,340 g/mol

Table 1 outlines the partial formulation for the B-side evaluated in Example 1 of US 5,389,696. In the evaluation of various IMR packages, US 5,389,696 added IMR components to the formulation outlined in Table 1 below. Table 2 shows the corresponding IMR and surfactant concentrations.

Table 1. Base B-side components from Example 1 in US 5,389,696.

Component	Concentration (PBW)
Polyol A	40
Polyol B	30
Polyol C	20
Polyol D	10
L6980	2
Aromatic diamine	1.5
Water	1.5
Desmorapid PV	0.6
Dabco 8154	0.75
Total	**106.35**

Table 2. IMR and surfactant concentration for Example 1 in US 5,389,696.

Run	IMR a	IMR b	IMR c	A/B	Total Parts	Polyol blend mass fraction L-6980 $[S]_B$	Polymer mass fraction L-6980 $[S]_P$	EO moles per 100-g total polymer
1	5	2.5	0	2.05	113.85	0.0176	0.0058	0.0053
2	5	5	5	1.93	121.35	0.0165	0.0056	0.0052
3	10	2.5	5	1.89	123.85	0.0161	0.0056	0.0052
4	10	2.5	7.5	1.85	126.35	0.0158	0.0056	0.0051
5	10	5	0	1.93	121.35	0.0165	0.0056	0.0052
6	15	0	0	1.92	121.35	0.0165	0.0056	0.0052
7	15	5	0	1.85	126.35	0.0158	0.0056	0.0051
8	15	5	5	1.79	131.35	0.0152	0.0055	0.0050

I declare that all statements made of my own knowledge are true, and that all statements made on information and belief are believed to be true. I made these statements with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of the application or any patent issued thereon.

January 25, 2007
Date

Trent A. Shidaker
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